40 or 50 feet. It is unknown in many parts of China, the provinces of Che-kiang and Kiangsu being the only ones, so far as can be ascertained, where the listening tubes are employed. Besides this toy, Chinese ingenuity produced, about a century and a half ago, the "thousand mile speaker." This implement is described as "a roll of copper, likened to a pipe, containing an artful device; whispered into, and immediately closed, the confined message, however long, may be conveyed to any distance, and thus, in a battle, recent instructions may be conveniently communicated. It is a contrivance of extraordinary merit." The inventor of the "thousand-mile speaker," one Chiang Shun-hsin, of Huichou, flourished during the reign of Kang-hsi, during parts of the seventeenth and eighteenth centuries. He wrote on occult science, astronomy and foreign physics, and the above description of his invention was copied from his works into a provincial encyclopædia. At the time the latter work was published—in the reign of Kien Long—there was no longer an instrument of this kind in the province, as the ingenious invention appears to have perished with the student who contrived it.

THE following very interesting table has been compiled from the records of the meteorological observatory at Tokio. It gives the total number of recorded earthquakes which occurred in the respective months during the ten years ending December 10, 1884:—

January	53	July	36
February	50	August	27
March...	73	September... ...	15
April	43	October	47
May	51	November	51
June	40	December	60

The list would, of course, need to be in full detail for each month of each year, in order that any safe deduction might be made from it; but the general notion that there are more earthquakes in winter than in summer receives some support from this table. The average per month for the ten years is 45; that for the six winter months (October–March) is 56; and for the six summer months 35, or about 40 per cent. less. An important element of disturbance in the figures would be the great improvement in seismological instruments since 1874, and the consequent registration of movements which would previously have passed unnoticed.

THERE have been a number of earthquake shocks during the past week. Another severe shock, accompanied by what is described as a tremendous report, occurred at Alhama, on January 27. By the fall of a house one person was killed and two others were injured. On the 27th and 28th fresh shocks occurred in the hot spring district of Southern Styria; also at four o'clock on the morning of the 27th a severe and prolonged shock was felt at Valparaiso. On the 31st a shock occurred at Algiers, destroying eight Arab houses. The shock was also felt at Setif.

MR. JAMES JACKSON, of the Paris Geographical Society, has issued a new and much extended list of various speeds in metres per second. It begins with the Mer de Glace at 0·0000099 m. per second, and concludes with the current from a Leyden jar in a copper wire of 0·0017 m. at 443,500,000 m. per second.

WE are glad to see that the *Health Journal*, the first number of which we noticed, is still continuing to do good work in connection with sanitary science. We have before us the twenty-first number, which contains several useful articles. We commend the *Journal* to the notice of those interested in the subject. It is published by Heywood, of Manchester.

THE *Journal de Saint-Pétersbourg* states that the first Russian school for Mussulmans has been opened at Tashkend. The pupils, who belonged to the families of native notables numbered forty-one at the commencement. It is proposed to open schools of the same kind elsewhere.

WHEN M. Barral died he had written the larger part of a "Dictionnaire d'Agriculture." The first number, which contains 250 pages large 8vo, two columns, closely printed, has just been published by Hachette and Co. About twelve similar parts will follow in the course of four or five years.

THE additions to the Zoological Society's Gardens during the past week include a Malbrouck Monkey (*Cercopithecus cynosurus* ♂) from West Africa, presented by Mrs. East; a Sambur Deer (*Cervus aristotelis* ♂) from Madras, presented by the Officers 1st Battalion Essex Regiment; a Long-eared Owl (*Asio otus*), a Tawny Owl (*Syrnium aluco*), British, presented by Mr. Geo. E. Crisp; a Malayan Tapir (*Tapirus indicus* ♂) from Malacca, a White Stork (*Ciconia alba*), European, two Magpies (*Pica rustica*), British, deposited; two Calandra Larks (*Melanocorypha calandra*), European, purchased; five Striped Snakes (*Tropidonotus sirtalis*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

THE OCCULTATION OF ALDEBARAN ON FEBRUARY 22.—In the occultation of Aldebaran on the 22nd of the present month, the immersion takes place while the sun is above the horizon in this country, and the emersion soon after sunset. The following times and angles are founded upon the data of the *Nautical Almanac*, the angles being reckoned as in that work; the times are Greenwich mean times at the respective observatories:—

	Immersion	Angle from N. point	Emersion	Angle from N point
	h. m.	°	h. m.	°
Greenwich... ...	5 16·6	36	5 49·6	344
Oxford	5 13·3	40	5 49·7	341
Cambridge ...	5 14·9	41	5 52·6	339
Dublin	5 1·8	52	5 50·0	329
Liverpool	5 7·3	49	5 53·3	331
Glasgow	5 3·7	60	5 57·9	320
Edinburgh... ...	5 5·3	59	5 59·3	321

VARIABLE STARS.—Dr. Gould notifies the detection of three new variable stars at Cordoba, which he calls respectively R Lupi, R Piscis Austrini, and R Phœnicis. In his communication to the *Astronomische Nachrichten* he refers to his recently published zones for their positions, which, brought up to the beginning of the present year, will be:—

	R.A.	Decl.
	h. m. s.	° ′
R Lupi	15 46 1	−35 57·2
R Piscis Austrini ...	22 11 28	−30 10·7
R Phœnicis	23 50 29	−50 25·6

By Argelander's formula of sines the last maximum of *Mira* should have occurred on January 28, but the maxima and minima of the last four or five years appear to have taken place between a fortnight and three weeks earlier than the dates assigned by the formula. Perhaps some reader of NATURE may be able to fix the time of the recent maximum from his own observations.

WOLF'S COMET.—The following ephemeris of Wolf's comet of short period is deduced from Herr Thraen's ellipse, which depends upon normal places to November 23. The comet was observed without difficulty at Lund on January 20:—

At 6h. Greenwich Mean Time

1885	R.A.	Decl.	Log. distance from Earth	Log. distance from Sun
	h. m. s.	° ′		
Feb. 6	2 10 44	−3 2·7	0·2569	0·2478
7	2 13 8	2 55·6		
8	2 15 31	2 48·6	0·2628	0·2500
9	2 17 55	2 41·5		
10	2 20 18	2 34·4	0·2687	0·2522
11	2 22 41	2 27·2		
12	2 25 4	2 20·0	0·2745	0·2544
13	2 27 26	2 12·8		
14	2 29 48	−2 5·5	0·2803	0·2567

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TEMPEL'S COMET, 1867 II.—Reference has been already made in this column to the impossibility of making any reliable prediction of the track of this comet at its approaching return, without a calculation of the perturbations since it was last observed in 1879, owing to its having passed pretty near to the planet Jupiter in 1881. It appears from a communication to the *Astronomische Nachrichten* that M. Raoul Gautier, of Geneva, is engaged upon a determination of the effect of the planet's attraction, and hopes to furnish observers with an ephemeris which may enable them to find the comet without difficulty. M. Gautier states that up to the time of minimum distance of the two bodies (0·55) in October 1881, a retardation of thirty days in the epoch of next perihelion passage had been caused by the planet's action, and it is not to be expected that the comet can arrive at perihelion before the end of June or beginning of July, though without perturbation it would have been due at the beginning of May.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1885, FEBRUARY 8-14

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on February 8

Sun rises, 7h. 29m.; souths, 12h. 14m. 25·6s.; sets, 17h. 0m.; decl. on meridian, 14° 50′ S.: Sidereal Time at Sunset, 2h. 16m.

Moon (2 days past Last Quarter) rises, 2h. 20m.; souths, 6h. 59m.; sets, 11h. 34m.; decl. on meridian, 16° 44′ S.

Planet	Rises h. m.	Souths h. m.	Sets h. m.	Decl. on Meridian ° ′
Mercury	6 39	10 45	14 52	21 26 S.
Venus	6 38	10 48	14 58	20 49 S.
Mars	7 36	12 18	17 0	15 39 S.
Jupiter	18 1*	1 6	8 11	11 48 N.
Saturn	11 46	19 49	3 52*	21 33 N.

* Indicates that the rising is that of the preceding, and the setting that of the following nominal day.

Phenomena of Jupiter's Satellites

Feb.	h.	m.	
9	4	27	I. ecl. disap.
	6	59	I. occ. reap.
	19	53	III. occ. reap.
10	1	56	I. tr. ing.
	4	16	I. tr. egr.
	22	55	I. ecl. disap.
11	1	25	I. occ. reap.
	2	45	II. ecl. disap.
11	6	5	II. occ. reap.
	20	22	I. tr. ing.
	22	41	I. tr. egr.
12	19	51	I. occ. reap.
	21	26	II. tr. ing.
13	0	21	II. tr. egr.
	5	54	III. tr. ing.
14	19	12	II. occ. reap.

Feb.	h.	
11	12	Mars in conjunction with the Sun.
12	0	Mercury in conjunction with and 0° 44′ south of Venus.
12	9	Mercury at greatest distance from the Sun.
13	10	Venus in conjunction with and 5° 9′ south of the Moon.
13	11	Mercury in conjunction with and 5° 58′ south of the Moon.

Note.—In the two preceding weeks the word *left* in the heading of the last column of the "Occultations" should have been *right*. The angles are understood to apply, as usual, to the inverted image.

GEOGRAPHICAL NOTES

THE Commission which was originally appointed to investigate the possibility of a maritime canal across the isthmus of Krao, in the north of the Malay Peninsula, has continued its exploration in this unknown region. It is composed of M. Delonell, accompanied at first by M. Paul Macey, Mr. Davidson, an English engineer, and a Siamese commissioner. Their second visit to the place was made in the spring and summer of last year. After ascending the peninsula from the isthmus of Krao to 7° 13′ N. latitude, and visiting the Samuil Islands, the most interesting and least known of the archipelagoes in the Gulf of Siam, the expedition penetrated the peninsula to the height of Singora, 7° 14′ N. latitude, where they discovered the existence of a State, Sam-Sam, composed of mestizos, or half-caste Malays and Siamese, the former haunt of pirates and semi-independent of Siam. By wide and deep channels which enter far into the country, the party were conducted to a large inland sea, called Talé-Sab, which they were the first Europeans to visit. This was found to be about 6 metres in depth, and 45 miles long by 12 wide, of a curious configuration, with small islands covered with the nests of sparrows. The water is fresh during the north-east monsoon, but brackish during the south-west; it separates the peninsula properly so-called from the island of Tantalam (or Ko Yai in Siamese) by a number of *arroyos*, which stretch from Singora in the south to Lacon in the north. The party landed at Taloung on the west side, at 7° 40′ N. latitude, where a Sam-Sam rajah supplied them with elephants to cross the peninsula. They crossed a large plain under rice cultivation to the borders of Klong Taloung, then reached the chain of Louang Mountains, which forms the end of the peninsula, and then descended the Tsang River, which flows into the Bay of Bengal. Three visits in all were made to these regions during the year, and the States of Tsang, Taloung, Lacon, Singora, and Stouil were thoroughly explored. The engineers have already made their geological reports of the whole regions, and certain specimens which have been analysed at the School of Mines in Paris shows that deposits of auriferous quartz, tin, and iron exist in this *terra incognita*. Numerous ethnographical observations were also made on the Sam-Sam, their government, and habits of piracy.

MR. A. R. COLQUHOUN has published a notice in the Eastern journals with regard to his projected exploration of the Shan States. His colleague, Mr. Holt Hallett, after consulting with him concerning the further exploration and survey of Siam and the Shan country, has left China for Bangkok, in order there to hold an interview with the King of Siam on the subject. He will thence proceed to Rangoon and Calcutta, to report to, and consult with, the Chief Commissioner of British Burmah and Lord Dufferin. From Calcutta Mr. Hallett will proceed to London to submit his reports to the Royal Geographical Society and the Chambers of Commerce which have supported the exploration survey. Any exploration on the southern frontier of China, such as was intended to be included, is for the present out of the question, owing to the unsettled condition of the frontier regions. The continuation of the explorations in Siam and the Shan country depends on the result of Mr. Hallett's visit to Siam and India. A preliminary report has been drawn up by Messrs. Colquhoun and Hallett, dealing with the first year's operations, which will be published on Mr. Hallett's arrival in England.

AT the meeting of the Geographical Society of Paris on the 23rd ult., M. Mascart president, M. Thouar, known for his journey in search of the remains of the Crevaux expedition, announced that he is about to start on his fourth journey in South America. His project is to ascend the Paraguay, and study the delta of the Pilcomayo, where Crevaux perished, and then to investigate the possibilities of a trade route between Bolivia and the Paraguay. M. Thouar will then carry out the mission with which he is charged by the Bolivian Government—viz. in company with some engineers and naturalists, to study the whole of Bolivia from scientific, industrial, and commercial points of view.—M. Cabres described some episodes of a journey which he recently made to Bokhara; and M. Rey presented to the Society a new map of the north of Syria, designed by M. Thuillier.

UNDER the title of "Un' Estate in Siberia fra Ostiacchi, Samoiedi, Sirieni, Tatari, Kirghisi e Baskiri" (Florence, 1885), Signor Stephen Sommier describes a voyage which he made down the Obi from its confluence with the Irtish to its mouth in the Arctic Ocean. He made during the journey interesting observations on the course of the river, and on the temperature of the water. Towards the end of July the mean temperature was 18° above zero, even at the mouth of the river, and in August it was still + 10°. These have much importance, for the question of the navigability of the Kara Sea. Under the influence of these masses of warm water, the coast ice should melt, and consequently the icebergs which have in recent years blocked the straits giving access to the Kara Sea cannot be of great extent. The most important part of the volume, however, is that devoted to the anthropology and ethnography of the Ostiaks and Samoyedes. On the course of the Obi are groups of habitations where travellers are supplied with rowers, and each time Signor Sommier changed his men—about a hundred times in

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